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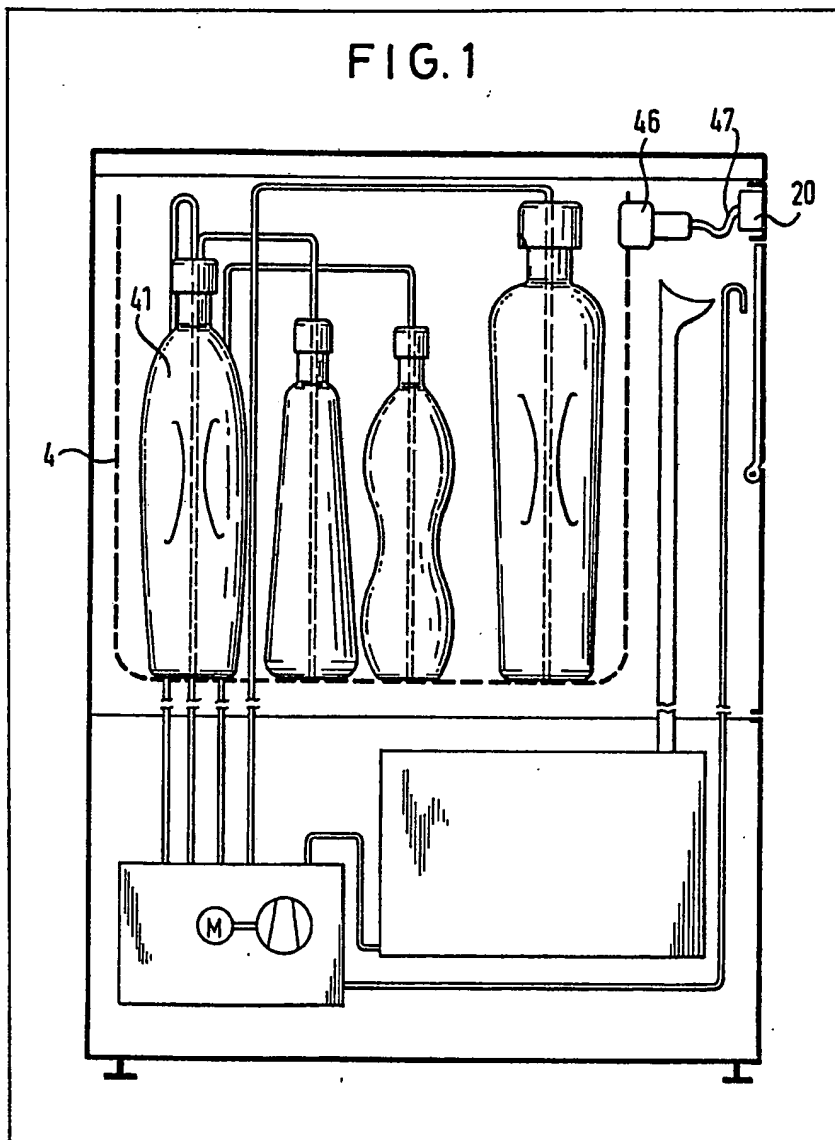
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- (71) Applicant
Bosch-Siemens
Hausgerate GmbH
(FR Germany),
Hochstrasse 17, 8000
Munchen 80, Federal
Republic of Germany
- (72) Inventor
Richard Graf,
Manfred Kruger
- (74) Agent and/or Address for
Service
Dr. Walther Wolff & Co.,
6 Buckingham Gate,
London SW1E 6JP

(54) **Control data input into metering and supply apparatus for washing and rinsing agents**

(57) In the case of apparatus for storing, automatically controlled metering and addition of liquid washing or rinsing agents kept in containers, the proper association of the respective washing or rinsing agents with corresponding metering channels should be as simple as possible. Such containers have for some time carried bar code labels or can be associated with other data carriers which serve the automatic

inventorising, price or discount setting of the goods in the wholesale and retail trade. Such data can include statements on the kind and/or the metering quantities and/or the concentration of the washing or rinsing agent and the content of this labelling can be transmitted by means of a data reader (46) to control equipment (20) of the apparatus.

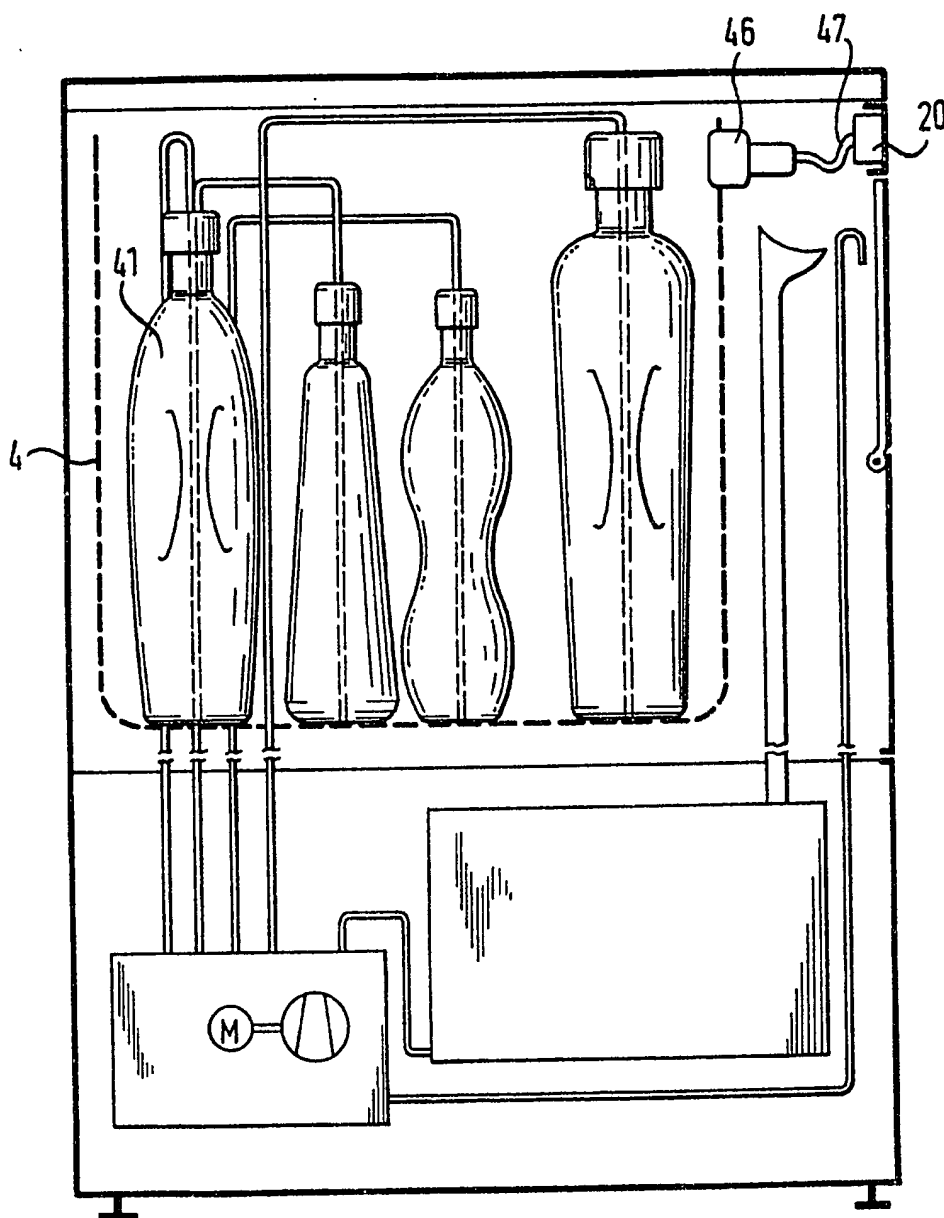
The labelling may be a bar code printed on the agent container, or a card associated with the container and detachable therefrom for insertion into a reader slot in the washing machine.



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FIG. 1



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FIG. 2

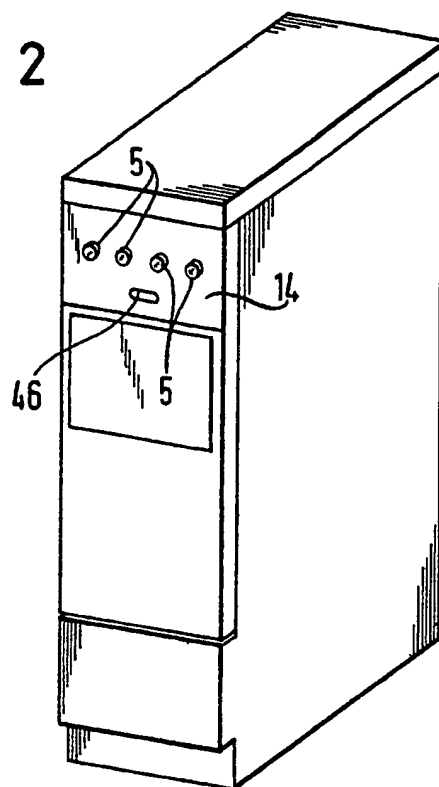
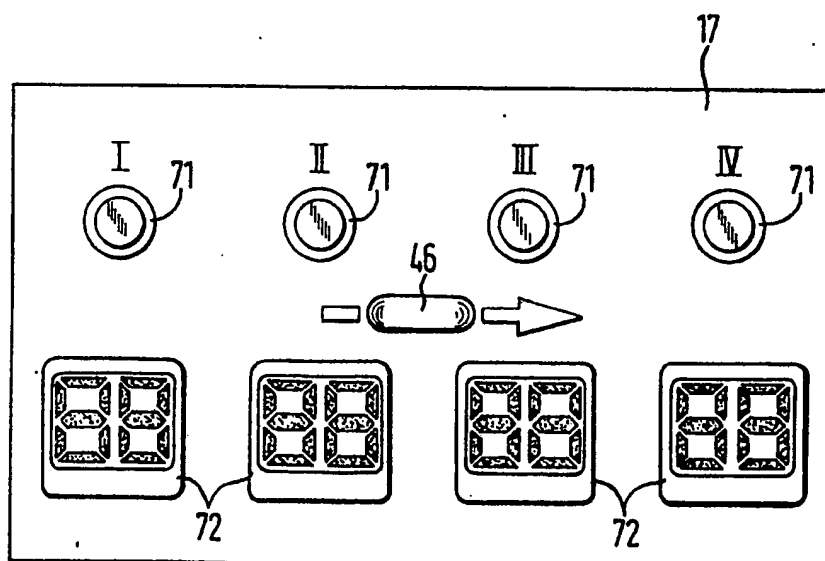


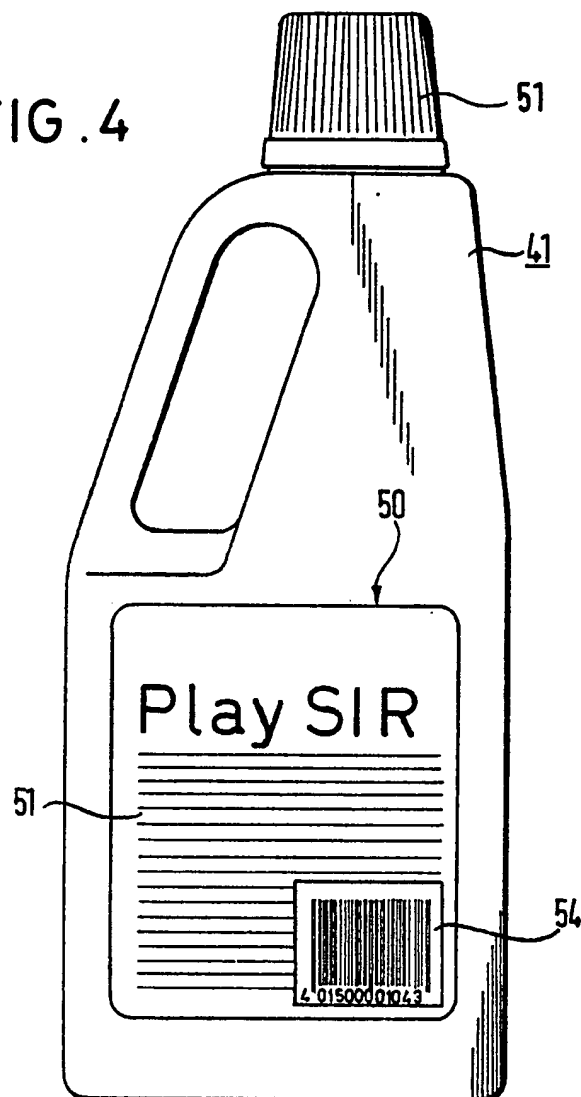
FIG. 3



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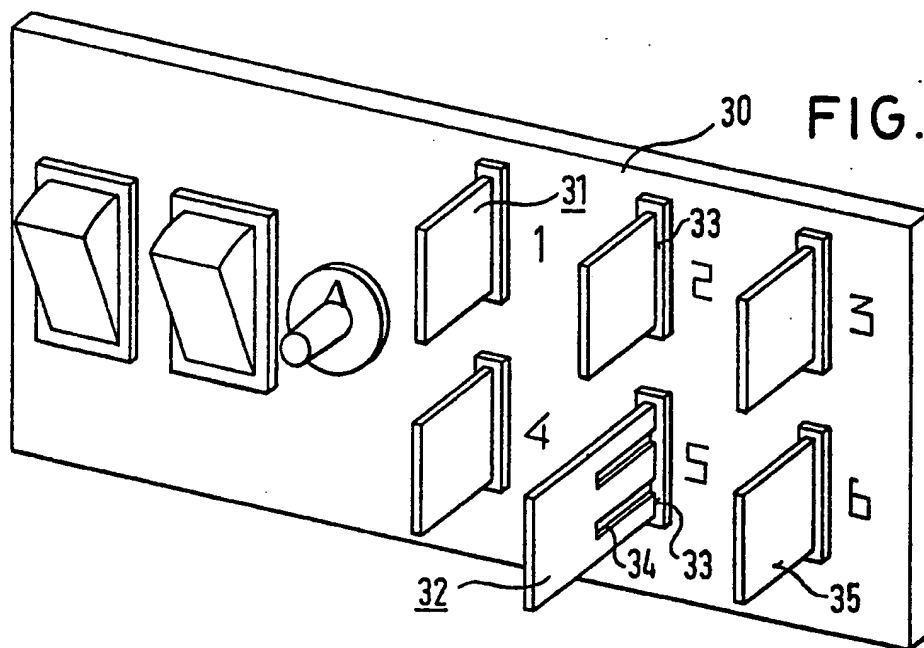
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FIG. 4



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FIG. 5



SPECIFICATION

Control data input into metering and supply apparatus for washing and rinsing agents

5 The present invention relates to a method of control data input into metering and supply apparatus for washing and rinsing agents, and to apparatus for carrying out such method.

In German (Fed. Rep.) Patent Specification No. 25 54 592 and Utility Model No. 80 33 429
10 there are disclosed apparatus in which washing or rinsing agents can be stored in made up or component form and fed by means of metering equipment in measured quantities in appropriate stages of a washing process. Such apparatus can
15 also be so constructed according to German patent application P 32 42 410.8 that the user, instead of pouring the content of a washing or rinsing agent container into a supply receptacle fixedly installed in the apparatus, can place the
20 container together with its content in the apparatus and connect it with the metering equipment.

It would be desirable to facilitate the operation and the association of the individual washing and
25 rinsing agents with respective metering channels of the apparatus so that erroneous operations or associations by the operator are avoided as far as possible. In that case, this facilitation should be possible for both apparatus with fixedly installed
30 supply receptacles, which are charged with washing or rinsing agents from containers, and apparatus in which containers can be placed and connected with metering channels.

According to a first aspect of the present
35 invention there is provided a method of effecting input of data provided on or in association with a washing or rinsing agent container into electronic control means of apparatus for storing, automatically metering and supplying such agent,
40 the data comprising information concerning at least one of the kind, metering quantity and dose concentration of such agent and the method comprising the step of transferring such data by a data reader to the central means.

45 Such a method can make use of the fact that bar code labels, which contain statements for the wholesale and retail trade to enable automatic inventoring and price and discount setting, are regularly applied on present day washing and
50 rinsing agent containers. Bar code labels of that kind can readily contain additional statements on the kind and/or the metering quantity and/or the concentration of the washing or rinsing agent.

According to a second aspect of the present
55 invention there is provided apparatus for carrying out the method of the first aspect of the invention, the apparatus comprising equipment for storing, automatically metering and supplying a washing or rinsing agent, electronic control means for
60 controlling storage, metering and supply operation of such equipment, and a data reader which is connected at an output thereof to the control means and which is operable to read said data and to transfer the read data to the control means.

65 In the use of apparatus embodying the invention, the operator can pass a bar code label past the reader and thereby transfer data of the above-mentioned kind to the control means. The control means for the metering and addition of the
70 individual washing or rinsing agent doses can then automatically evaluate this data and translate it into the required supply of the agent.

Such automatic evaluation of the data can also be initiated through insert cards which accompany
75 the containers, for example as a part which can be broken off from the container body or a closure cap thereof.

Examples of the method and embodiments of the apparatus of the present invention will now be
80 more particularly described with reference to the accompanying drawings, in which:

Fig. 1 is a schematic side view of first metering and supply apparatus embodying the invention;

Fig. 2 is a perspective front view of second
85 metering and supply apparatus embodying the invention;

Fig. 3 is a front view of an operating panel of third metering and supply apparatus embodying the invention;

90 Fig. 4 is a side elevation of a liquid washing agent container with a bar code label readable by a data reader of apparatus embodying the invention; and

Fig. 5 is a perspective front view of an
95 operating panel of fourth metering and supply apparatus embodying the invention.

Referring now to the drawings, there is shown in Fig. 1 metering and supply apparatus for use in association with, for example, a laundry washing or dishwashing machine. The apparatus is adapted to house washing and/or rinsing agent containers
100 41, although it could be provided with fixed receptacles for receiving the contents of such containers. In addition, the apparatus comprises a data reader 46 which is mounted in the region of a basket 4 serving as container locating means, namely at one of its side walls, preferably the front side. On the way to its respective location, each container 41 can be moved past the reader 46 to
105 enable the reader to read a bar code label on the container and to transmit the read data to control means 20 by way of an output line 47.

Alternatively, the reader can be arranged, as shown in Fig. 2, in an operating panel 14 at a front
115 side of the apparatus. In this case, an optical reading device 46 is arranged underneath operating knobs 5.

The function will now be explained by reference to a further embodiment of the apparatus, which
120 has an operating panel 17 as shown in Fig. 3:

The arrow at the reading device 46 indicates to the user that the bar code label must be guided past this location. Provided in the operating panel 17 are operating elements 71, for example press
125 keys, actuable to predetermine for the control means a particular one of metering channels I to IV to receive a washing or rinsing agent from the container having the bar code label that has just been read. Also provided on the panel 17 are

indicating elements 72 at which, for example, the concentration strength of that washing or rinsing agent is made visible in clear text. Instead of the concentration strength, a statement on the metering quantity can appear in the respective

5 indicator 72 and, for example, remain until a new input has been undertaken at the reading device 46 for the metering channel concerned.

10 The container 41 illustrated in Fig. 4 carries a label 50 with promotion and information imprint 51. Also present on the label 50 is a bar code label 54. The label 54 can contain the statements on the kind and/or the metering quantities and/or the concentration of the washing or rinsing agent

15 disposed in the container 41.

By means of the afore-described apparatus embodying the invention, it can be ensured that respectively proportionate metering quantities of appropriate washing or rinsing agents are added. Since the control means 20 is informed which washing or rinsing agent is disposed in which of the containers 41 and how highly concentrated this is, erroneous operations and deficient or excessive meterings are avoidable. The information contained in the bar code label can, if they are of interest for the process data, be indicated after the reading operation as described in connection with Fig. 3. In the simplest case, this could be an indication of which supply receptacle is to receive the liquid washing or rinsing agent disposed in the container. Devices can be provided in the apparatus, which are addressed by the control means 20 and serve to free only that supply receptacle which, according to the read-out, is to be filled. For this purpose, appropriate closure elements can, for example, be provided at stub screw connections associated with the receptacles.

When a statement on the concentration of the washing or rinsing agent is contained in the bar code label, the control means 20 can automatically calculate from this the required quantity of the agent for each metering.

20 A data reader of like kind and co-operating with the bar code label can be employed in apparatus in which supply receptacles are fixedly built in and replenished from, for example, containers. In that case, the apparatus can be equipped with control means and be connected through a signal line and a liquid duct with the associated washing machine or dishwashing machine. It is expedient when the control means, with the use of process data from the machine transmitted by way of the signal line and also the read data on the concentration strength of the stored washing or rinsing agent, automatically calculates the required quantity of the agent and causes equipment built into the apparatus to meter and add the washing and rinsing agent or concentrates at the instants appropriate in the washing process. This avoids the possibility of erroneous setting of the concentrate strength by way of operating knobs on an operating panel after reading from the labelled container. Even an unintended resetting of the operating knobs, for example during the

cleaning of the operating panel, could lead to such erroneous settings.

25 In the apparatus control panel 30 shown in Fig. 5, indications can be provided at the outside of the apparatus, at desired instants after insertion of agent containers or the replenishing of the agents, to the operator to show which agent is stored in the apparatus. This is of particular significance when the containers are removed from the household after replenishing. Moreover, the apparatus can overcome the difficulties involved in ensuring a clear association of the operating knobs with the reserve supplies.

30 The apparatus of Fig. 5 presupposes that the containers are accompanied by data carriers which are matched in their dimensions to equipment of the operating panel as will be described in the following. Such data carriers are insert cards 31, which are shown inserted in the operating panel 30 and mechanically readable data inscriptions of which can be so applied that, for example, they are not recognisable from outside. For this purpose, magnetically or electrically conductive or differently transparent regions can be provided. As is apparent from the card 32 protruding more than the other cards, for a unique mechanical association of each card with an individual one of receiving openings 33, the cards and the openings can have shaped guide means which are mutually complementary. Lateral grooves 34, which co-operate with corresponding groove toothings in the receiving opening 33, are suitable as such guide means.

35 The cards 31 are insertable into the openings 33 of the panel as far as an abutment behind the panel. The control of the apparatus is ready to function only when all of the cards about the abutment. Otherwise, an indication, in the manner of an indication for an exhausted washing or rinsing agent reserve, can appear on the panel of the associated washing machine and the program prevented from starting in conjunction with automatic metering.

40 The data, provided on the inserted part of each card 31 and concerning the concentration of the stored washing or rinsing agent, is automatically communicated to the control means of the apparatus. This processes the data for the determination of the correct metering of the agent.

45 A further form of association of the correct card with the respective opening, apart from association by unique guide means shapes, is the provision of corresponding coloured markings on the cards and in the region of the openings. This facilitates visual association, which is additionally ensured by the mechanical association provided by the guide means.

50 The area 35 on the outwardly protruding part of the cards 31, 32 can be reserved for imprinting with a designation of the washing or rinsing agent. As a result, the operator is informed about which agent is present in the supply receptacle concerned. Moreover, these areas 35 are also suitable for free inscription, so that the operator

can, for example, enter the replenishment date. The operator then has the facility for checking the consumption of the individual washing or rinsing agent.

- 5 Arranged behind the operating panel 30 and in alignment with each card is a stroke device, for example a solenoid, a bimetallic strip or an expansion material container, which can be actuated in dependence on the agent in the
10 associated receptacle falling below a certain level and which partially pushes out the associated card, as illustrated by the card 32. The operator is thereby given an indication of which receptacle lacks washing or rinsing agent and, by means of
15 the printing on the card, can attend to replenishment of the receptacle by the appropriate agent.

- Moreover, simultaneously with the triggering of the stroke device, a signal, which appears as an
20 indication on the operating panel for the operator, can be transmitted to the washing machine or dishwashing machine. The washing or rinsing process then in progress continues, but subsequent processes with automatic metering
25 can only be carried out, in a limited number, if the partly ejected card 32 is fully re-inserted. After completion of that process, the card can then be pushed back out by the stroke device. Through the need to effect a special operating manipulation
30 before each washing operation, namely pushing in of the partly ejected card, the lack of washing and rinsing agent is repeatedly brought to the attention of the operator.

- In the delivery state of the apparatus, blank
35 insert cards can be enclosed, which contain no data about the agent concentration. However, printed on the cards is an indication of the kind of washing or rinsing agent to be added to the associated supply receptacle. These blank cards
40 can be pushed into the receiving openings so that no further explanation need be given to the operator.

- Insofar as the value of the washing or rinsing agent concentration is not stored volatily, the
45 control means 20 can compare the concentration value of a previously added agent with the corresponding value of a new agent, the latter value being derived from insert card or bar code label data read off by the data reader. If sufficient
50 data is present for this purpose, the control means can decide whether the two agents are compatible with each other or whether, if these agents are brought together, a chemical reaction which would cause a disturbance to the operation of the
55 apparatus might occur. Moreover, different concentrations of the previous and new agents can lead to erroneous calculations. In the aforementioned case and in similar cases, the user can be required, through an indication on the
60 operating panel, to completely empty and clean the supply receptacle before adding the new agent.

CLAIMS

1. A method of effecting input of data provided

- 65 on or in association with a washing or rinsing agent container into electronic control means of apparatus for storing, automatically metering and supplying such agent, the data comprising information concerning at least one of the kind,
70 metering quantity and dose concentration of such agent and the method comprising the step of transferring such data by a data reader to the control means.

2. A method as claimed in claim 1, wherein the
75 data is provided by a bar code label on the container and the step of transferring comprises reading the bar code by the data reader.

3. Apparatus for carrying out the method claimed in claim 1, comprising equipment for
80 storing, automatically metering and supplying a washing or rinsing agent, electronic control means for controlling storage, metering and supply operation of such equipment, and a data reader which is connected at an output thereof to the
85 control means and which is operable to read said data and to transfer the read data to the control means.

4. Apparatus as claimed in claim 3, comprising indicating means for providing an indication of
90 metering data read by the reader.

5. Apparatus as claimed in either claim 3 of claim 4, comprising indicating means for designating a metering duct of the metering equipment for receipt of the content of such
95 container after reading of the data.

6. Apparatus as claimed in either claim 3 or claim 4, comprising selector keys operable to determine a metering duct of the metering equipment for receipt of the content of such
100 container after reading of the data.

7. Apparatus as claimed in either claim 5 or claim 6, comprising lock-out means to prevent introduction of the content of such container into any metering duct of the metering equipment
105 other than the designated or determined duct.

8. Apparatus as claimed in any one of claims 3 to 7, the control means comprising a store for data transferred thereto, comparison means for comparing newly transferred data associated with
110 a metering duct of the metering equipment with previously transferred data associated with that duct, and indicating means for indicating differences between the compared data.

9. Apparatus as claimed in claim 8, the difference indicating means being adapted to indicate differences signifying potential for chemical reaction with each other of two washing or rinsing agents respectively associated with the newly transferred data and the previously
120 transferred data.

10. Apparatus as claimed in claim 8, the difference indicating means being adapted to indicate differences in dose concentrations of two washing or rinsing agents respectively associated with the newly transferred data and the previously
125 transferred data.

11. Apparatus as claimed in claim 3, comprising locating means for locating a plurality of such containers in the apparatus, and

connecting duct means for connecting the containers to a metering duct of the apparatus, the data reader being arranged in the region of the locating means.

- 5 12. Apparatus as claimed in claim 11, wherein the data region is disposed adjacent to a path of movement of the containers into rest positions in the apparatus.
- 10 13. Apparatus as claimed in claim 3, comprising an operating panel provided with openings for receipt of insert cards each carrying data associated with the content of a respective washing or rinsing agent container, the reader comprising a respective reading device arranged
- 15 at each opening to read the data carried by a card received in that opening.
- 20 14. Apparatus as claimed in claim 13, comprising a respective detecting device associated with each opening for detection of a card fully inserted into that opening.
- 25 15. Apparatus as claimed in either claim 13 or claim 14, comprising a respective ejector associated with each opening and operable to eject a card from that opening.
- 30 16. Apparatus as claimed in claim 15, comprising means responsive to a predetermined extent of consumption of the washing or rinsing agent from each container to trigger ejection by the ejector of the associated insert card.
- 35 17. Apparatus as claimed in any one of claims 13 to 16, comprising guide means associated with each opening, each guide means differing in shape from the or each other guide means and being arranged to permit insertion into the
- 40 associated opening of and only of an insert card having a guide portion of complementary shape.
- 45 18. Apparatus as claimed in any one of claims 13 to 17, wherein the panel is provided in the region of each opening with respective coloured marking, the colour of each marking being different from that of the or each other marking thereby to enable visual identification with a correspondingly coloured insert card.
19. Apparatus as claimed in any one of claims 13 to 18 in combination with a plurality of

insert cards carrying data concerning the kind, but not the metering quantity or dose concentration, of an associated washing or rinsing agent.

- 50 20. Apparatus substantially as hereinbefore described with reference to Fig. 1 of the accompanying drawings.
21. Apparatus substantially as hereinbefore described with reference to Fig. 2 of the accompanying drawings.
- 55 22. Apparatus substantially as hereinbefore described with reference to Fig. 3 of the accompanying drawings.
23. Apparatus substantially as hereinbefore described with reference to Fig. 5 of the
- 60 accompanying drawings.
24. A washing or rinsing agent container in combination with an insert card which carries data associated with the content of the container and which is adapted for insertion into one of the
- 65 openings in the operating panel of apparatus as claimed in any one of claims 13 to 18 so as to enable reading of the data by the respective reading device.
25. A combination as claimed in claim 24, the
- 70 card being supplied in packaging means accompanying the container.
26. A combination as claimed in claim 24, the card being removably attached to the body of the container.
- 75 27. A combination as claimed in claim 24, the card being removably attached to a closure of the container.
28. A combination as claimed in any one of claims 24 to 27, wherein the card comprises a
- 80 first portion adapted to be received by said one opening and a second portion which projects out from the opening when the first portion is received therein, the card being provided on the second portion with a labelling zone.
- 85 29. A combination as claimed in claim 28, wherein the labelling zone carries a printed statement concerning the agent.
30. A combination as claimed in claim 28, wherein the labelling zone comprises a blank
- 90 surface able to be marked with data.